

FORAGE FISH REVIEW
SARC MEETING, LACEY, 3/10/08

WHICH SPECIES?

Obligate shoreline demersal spawners:

- Pacific herring, *Clupea pallasii*, (on marine vegetation beds)
- Surf smelt, *Hypomesus pretiosus*, (on upper intertidal gravel)
- Pacific sand lance, *Ammodytes hexapterus*, (on upper intertidal sand/gravel)

WHAT IS BEING PROTECTED?

These species' documented spawning sites.

Forage fish spawning sites received much damage from development prior to 1970s.

WHERE?

Throughout western Washington's marine waters.

Each species occupies roughly 10% of the shoreline.

Detailed spawning-site information available in WDFW Priority Habitats/Species (PHS) and WDFW Salmonscape databases.

WHEN?

Each species' spawning season:

- Herring: January-June, with most spawning in February-March.
- Surf smelt: year-round, fall-winter, or summer, depending on area.
- Sand Lance: November-February

Detailed spawning-season data are available by area from WDFW.

Work-window closures commonly applied to in-water activities through HPAs.

WHY APPLY PROTECTIVE MEASURES?

WDFW/WDFW has applied regulatory protection since 1980s, via Hydraulic Code.

Forage fish spawning sites listed among defined "critical areas" in GMA.

CTED expects forage fish spawning sites to be mapped and protected in CAOs.

HOW HAVE FORAGE FISH HABITAT DATA BEEN GATHERED?

WDFW/WDFW and NGOs have been gathering herring and surf smelt spawning habitat data since 1972.

WDFW/WDFW and NGOs have been gathering sand lance spawning habitat data since 1989.

Forage fish spawning habitat data have been gathered using consistent protocols.

Survey protocol training is available annually through WDFW.

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FORAGE FISH SPAWNING HABITATS IN THE NEARSHORE ZONE OF PUGET SOUND

"Marine Riparian" vegetation zone



Drift Logs
sand-gravel beach zone
Sand Smelt
Sand Lance

cobble-boulder zone

Eulachon,
Longfin smelt

Anadromous, to rivers

Herring

eelgrass beds
tidelflats

red algae (*Gracilaria*)

Anchovy
Pelagic, open waters

tidal elevation

+10'

+5'

0'

-5'

TYPICAL FORAGE FISH SPAWNING ZONES*

SAND LANCE

+11'

+7'

SURF SMELT EHW

+5'

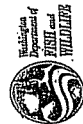
HERRING

+3'

-5' to -40'

(lower edge of vegetation beds)

* Seattle District tidal elevations



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